

How Misinformation Fosters Urban Human-Coyote Conflicts

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ABSTRACT: The Colorado Division of Wildlife (CDOW) recently conducted an urban coyote symposium for city decision-makers in the Denver metro area in response to a burgeoning coyote problem, including multiple attacks on humans. The symposium was well organized, but it conveyed typical messages about managing human-coyote conflicts that I contend are misconceptions and misinformation. They include: we're encroaching on coyote habitat; coyotes that attack pets and people are abnormal; lethal control should only be used as a last resort; killing coyotes simply produces more coyotes; we should coexist with our "coyote neighbors"; hazing is the answer; and "it's a people problem, not a coyote problem". I dispute these concepts, and I contend that promoting the components of coexistence can actually foster human-coyote conflicts. In the process I also support the case for lethal control.

KEY WORDS: abnormal behavior, *Canis latrans*, carrying capacity, coexisting, Colorado, Colorado Division of Wildlife (CDOW), coyotes, habituation, hazing, human-coyote conflicts, lethal control, urban wildlife

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INTRODUCTION

In February 2009, I attended an urban coyote (*Canis latrans*) symposium organized by the Colorado Division of Wildlife (CDOW). The symposium was directed at city decision-makers in the Denver metro area who were being confronted with a burgeoning aggressive coyote problem. Pets were being attacked and killed on a daily basis, and at least 3 people had been bitten in recent months. There had been at least 9 documented attacks on people in Colorado in the past 5 years. The purpose of the symposium was to address the problem, educate people about coyotes, clarify the CDOW's role in dealing with the problem, lay out options for resolving the problem, facilitate development of coyote management plans by each city, and promote a collaborative effort among the various entities.

Addressing these issues is complicated by two very significant factors: 1) Amendment 14 to the Colorado constitution, which largely prohibits the use of foothold traps and snare devices to take wildlife, and 2) the enterprise status of the CDOW, which has statutory responsibility to manage state-owned wildlife. Amendment 14, which was adopted in November 1996, contains restrictions that make it very difficult to use prohibited devices in situations of human health/safety and allow no exemption for the protection of pets. The CDOW, being funded primarily by license fees and no state tax revenue, has limited personnel and financial resources to direct toward urban wildlife management. Consequently, the Division has been reluctant to engage the urban coyote problem. These two factors largely frame how we in Colorado handle urban human-coyote conflicts.

Much of the information presented at the symposium was credible and helpful, e.g., we can't eradicate coyotes, coyote relocation is not practical, re-instilling fear of people is essential, humans feeding coyotes exacerbates the problem, etc. However, there were other sound bites and messages (some subtle or even subliminal; some blatant) with which I disagree. In fact, collectively I

believe they can actually foster human-coyote conflicts rather than mitigate them. The purpose of this paper is to address some of this misinformation in detail, in an effort to create a more balanced and accurate picture of what's actually going on with urban coyotes and how to best manage them. Some of my points are well supported and documented by scientific research, while others are more anecdotal or speculative.

POINTS OF CONTENTION

"We're living in coyote country!"

The implied messages are these: Denver is built on historic coyote habitat; coyotes were here first; we are encroaching on their habitat; coyotes have a right to be here. Historically, human encroachment on wildlife habitat and loss of habitat have negatively impacted many wildlife species, but the coyote isn't one of them. Coyotes have benefitted from human alterations to the North American landscape. And while historically we've displaced coyotes in some places where cities and towns grew, at the same time coyotes have been spreading across the continent, perhaps more successfully than another mammal except humans. Ironically, in the past 20 years, we've witnessed a dramatic reversal of this encroachment process: coyotes are actually encroaching on our habitat, and they are doing so at an unprecedented rate. In the Denver metro area, predominately human habitat, we have created *safe, superior habitat* for coyotes. They aren't forced to live among us – they choose to live among us. Therefore, we (i.e., property owners, city administrators, wildlife professionals) should be dictating where and how coyotes live, not vice versa. We shouldn't have to be held captive in our own homes or backyards simply because coyotes have moved into our neighborhoods. CDOW policy should not consider urban pets simply "part of the food chain." At some point, we need to draw a line on the asphalt and warn coyotes that they are now entering "people country."

Our coyotes are “abnormal” – they attack!

This is the idea that coyotes attacking and killing pets, and being aggressive around people, are exhibiting “abnormal behavior.” A leading coyote expert in Colorado, Major Boddicker, argues that such behaviors are normal, i.e., coyotes are being coyotes and doing what coyotes naturally do (pers. commun., February 2009). Admittedly, we are seeing human-coyote conflicts in urban settings rise to unprecedented levels, and most are quite recent. To date, coyotes have attacked people in at least 19 states and 4 Canadian provinces (Timm and Baker 2007). And in October 2009, a second human fatality occurred, a 19-year-old female hiker in eastern Canada (Wilkinson 2009). However, I suggest that coyotes are simply being coyotes – highly adaptable, opportunistic, fairly large predators that exploit environments and assert their dominance in order to survive. That’s all they “know to do.” Apart from disease (e.g., rabies), their motivation to attack other creatures stems from hunger (i.e., predation), dominance (i.e., hierarchy), competition (i.e., territoriality), self-defense, etc. Coyotes explore and exploit whatever niche is available to them until something constrains them.

In Yellowstone National Park, that constraint is the re-introduction of wolves (*Canis lupus*). Where wolves are now present, coyote densities have dropped. While some wolves have attacked and killed coyotes, most of this change is behavioral: coyotes have learned to avoid wolves, but they remain present in good numbers in areas where wolves are scarce (Berger and Gese 2007). It took relatively few coyote deaths by wolves to condition remaining coyotes to lay low or move out of wolf areas. I hypothesize that coyotes in Denver don’t behave any differently than coyotes in Yellowstone. As successive generations of urban coyotes become more habituated to people, they will exploit that environment and assert their dominance until something (or someone) gives them good reason to be wary of humans.

Much of the behavior we see in urban coyotes today is not really new. Habituated coyotes were observed begging tourists for food in Yellowstone as early as 1947 (Young and Jackson 1951), and in *God’s Dog*, author Hope Ryden (1975) describes a Yellowstone coyote jumping into her car and refusing to leave. While coyote attacks on humans in Colorado and in several Eastern states are very recent, widespread and escalating, suburban coyote attacks on humans were first reported in southern California, with eight attacks documented between 1978 and 1981, including a fatal attack on a 3-year-old girl (Howell 1982). I maintain that the coyote behavior prompting these attacks is quite normal. Many people have suffered bites while trying to rescue their dogs from coyote attacks occurring either in their own yards or while walking dogs in their neighborhoods. A coyote likely views a dog on a leash as a rival canine intruder in the coyote’s territory, or as a threat to the coyotes’ nearby den of pups. In such situations, coyotes can be so focused on the pet that they ignore human presence; their urban experience is that humans routinely ignore them. Coyote hunters have known for decades that coyotes will respond aggressively to dogs, and they regularly use them to decoy coyotes at dens sites where

they can be shot (Rowley and Rowley 1987, Coolahan 1990). Joggers and trail bikers can prompt a prey chase response. There is evidence that coyotes can perceive small children as prey (Carbyn 1989, Timm et al. 2004). Similar behaviors, including attacks on people, have been seen in other canid species, including wolves and dingoes (Schmidt and Timm 2007). In all these instances coyotes are doing what coyotes do – behaving like coyotes. It’s normal.

Warning: Lethal Control – use only in an emergency!

It baffles me that some people strongly believe that people killing animals is always “bad”, and that human interaction/intervention with wildlife is “unnatural.” The fact is, we are here, too. Whether you believe in Divine creation or Darwinian evolution, humans are at the top of the food chain. As such, we have a great stewardship responsibility, but we are not subservient to wild animals, especially in urban settings (see Vantassel 2008).

Some of the familiar arguments against the effectiveness of lethal control include: 1) we’ve been killing coyotes in this country for 200 years, and now they are more numerous and widespread than ever before; 2) if you remove one coyote, another will simply take its place; and 3) killing coyotes in a given area actually increases the number of coyotes. The fact that coyotes are more numerous and widespread than ever before is certainly testimony to their great adaptability, resilience, and survivability. They are clever, opportunistic, tough, and prolific. However, that doesn’t mean lethal control efforts have been ineffective. There are many documented, successful control programs in both agricultural and urban settings, including some where very positive cost:benefit ratios have been calculated (Connolly 1982, Conover 2002:165, Baker 2007). In fact, I don’t think there’s any doubt that coyote populations were held in check and significantly suppressed in many areas of the west during the 1940s, ‘50s, and ‘60s, when government predator control programs to reduce livestock losses were well-funded and restrictions on toxicant use were minimal. The coyote control program in the Edwards Plateau region of Texas is a good example (Phillips and Nunley 1995). Arguably, the western sheep industry would have disappeared a long time ago if coyote control programs weren’t in place.

Does lethal control work in urban areas? Absolutely! The first well-documented urban coyote program was in Glendale, CA, in 1981 (Howell 1982, Baker 2007). Immediately after the fatal coyote attack on the 3-year old girl, a large-scale public education program (including warnings, hazing techniques, and a coyote hotline) was implemented, along with an intensive foothold trapping and shooting program. Within 80 days, 55 coyotes were removed from within half a mile of the child’s residence. The removal of the coyotes, coupled with the education program, dramatically reduced reports of pet attacks, and there were no further reports of coyote attacks on humans in Glendale for over 20 years.

In Griffith Park, within the city of Los Angeles, CA, 5 adults and 2 children were attacked by coyotes and injured during 1994-95. While implementing a public education program, a team of trained sharpshooters was

brought in. Five alpha adult and three young adult coyotes were quickly removed. There were no further attacks and coyotes appeared very wary of humans for over 10 years, even though coyotes were common in adjacent areas. In 1991 in northwest Laguna-Nigel, Orange County, CA, a pet walker was chased and his poodle ripped from his arms and killed. There were numerous other daylight pet attacks. Foothold traps were set and two coyotes were taken. There was no recurrence of bold coyote activity and only incidental cat losses for at least 6 or 7 years. Nearly identical scenarios of people being attacked were documented in southeast Laguna-Nigel in 1995, in the Forster Ranch area of San Clemente in 1992, 2001, and 2005), in south San Clemente and in San Juan Capistrano in 1997, and in Arcadia in 2004 (Baker 2007).

Rob Erickson, a colleague who operates a wildlife control business near Chicago and has worked closely with Stan Gehrt, research leader of the often-cited "Cook County, Illinois, Coyote Project" (Gehrt 2006, 2007), has probably trapped and shot more nuisance coyotes in the Chicago area than anyone else. Rob assures me that he has at least 30 to 40 documented cases in which he successfully stopped aggressive coyote behavior and attacks on pets with the use of foothold traps and shooting (R. Erickson, pers. commun., 2009).

My own experience bears this out, both in rural and urban situations. I've done coyote damage control trapping for Colorado ranchers for over 40 years, mostly on a preventive basis to accomplish local population reductions prior to calving or lambing. At most such sites, ranchers' losses to predators did not occur or were minimal. In the dozen or so instances where I had to go back and do follow-up or corrective control, the losses stopped. In cases when I was called in where no preemptive control had been done, I successfully removed the problem coyote and losses stopped. When preemptive coyote removal did not work, invariably it was because coyotes filled the void, moving in from adjacent high-population areas where control was not being done. In urban settings, I've used foothold traps, cable restraints, cage traps, and shooting to successfully remove problem coyotes. In each case, attacks on pets and aggressive behavior toward humans stopped. Lethal control works. And, I might add, I'm quite sure that not one coyote that I've removed has ever again attacked a dog, eaten a cat, or threatened a person!

Southern California coyote expert Rex Baker states from his experience that foothold trapping is the most effective tool in removing problem coyotes, stopping aggressive behavior, and re-instilling fear of humans (Baker and Timm 1998, Baker 2007). Shooting is an effective alternative in some situations. Baker and his colleagues state, "When coyote attacks on pets have begun to occur in an area, it is imperative that the problem be corrected by use of trapping, so as to prevent escalating human-coyote problems, including attacks on people" (Baker and Timm 1998:310).

As for using lethal control primarily as a last resort, it simply boils down to a question of whether you want to prevent attacks on pets and people, or not! Baker and his colleagues developed a list of increasingly troublesome

stages of coyote behavior, leading up to human safety risk (Timm et al. 2004, R. Baker pers. commun. 2010). These stages are often predictable and occur in this sequence:

1. An increase in observing coyotes on streets and in yards at night.
2. An increase in coyotes non-aggressively approaching adults and/or taking pets at night.
3. Early morning and late afternoon daylight observance of coyotes on streets and in parks and yards.
4. Daylight observance of coyotes chasing or taking pets.
5. Coyotes attacking and taking pets on leash or in close proximity to their owners; coyotes chasing joggers, bicyclists, and other adults.
6. Coyotes seen in and around children's play areas, school grounds, and parks in mid-day.
7. Coyotes acting aggressively toward adults during mid-day.

An obvious question to me is, "If lethal control (i.e., foothold traps and/or shooting) has been shown to be the most effective means to quickly stop coyote attacks on pets/people and the most effective means to re-instill fear of people in coyotes, why wait until half the neighborhood pets are killed, or some child is attacked, before implementing lethal control?" Unfortunately, most cities, agencies, and homeowner's associations wait until at least steps 4 or 5, or until a person is bitten, before initiating control actions. A notable exception is the city of Austin, TX, which has developed a city-wide coyote management response system using this scale of behavioral stages to define thresholds that, when reached, trigger coyote removal actions before a significant threat to human safety occurs (Farrar 2007). Of course, we in Colorado don't have much choice about when to use lethal control due to Amendment 14 and ordinances that prohibit discharge of firearms within city limits.

In regard to the objection to lethal control that states, "If you remove one coyote, another will simply take its place", I certainly recognize that this notion is fueled by observations of how quickly coyotes immigrate from surrounding areas to fill vacant territories. I've seen this firsthand, especially when the habitat factors that attract coyotes into neighborhoods have not been identified and changed. However, Baker has observed that lethal removal of problem coyotes can, in some cases predictably, cause the remaining coyotes to either leave the area or become much more wary of humans, a behavior that may persist for quite some time (Baker and Timm 1998).

A key question, then, is whether a newly-arrived replacement coyote's behavior will also be problematic. We know coyotes are highly intelligent and show individualistic behaviors. Research and experience tell us that not all coyotes in a given area kill livestock or attack pets; most don't. There is evidence that the alpha (i.e., dominant) adults in a given territory cause most of the sheep predation (Sacks et al. 1999). My experience suggests there is a parallel in urban areas, with alphas being the most likely coyotes to take pets or bite people. When we remove a problem coyote, the one taking its place is likely to be a younger, subordinate, less aggressive

animal, that is less likely (at least for some period of time) to create conflicts.

Certainly, localized coyote population reductions can also be very effective, especially when the dominant animals are removed in the process. The selective animal approach is obviously less effective in areas where coyote territories are small and densities are high. That's why it's so important to have a broad-scale, collaborative effort among adjoining communities in the Denver metro area. The bottom line is that lethal control can be very effective and should not be considered the last resort. But, coyote control is a lot like mowing your lawn – it's not a one-time fix. To be effective long-term it has to be repeated periodically, if not routinely, unless homeowners make a consistent effort to remove coyote attractants: food, harborage, and water sources, as well as alter their coyote-friendly behaviors.

Don't kill coyotes – you'll have more than before!

This notion that killing coyotes in a given area actually increases the number of coyotes, thereby making the problem worse, is becoming more prevalent in our society. The source usually cited as the basis for this belief is the publication "The Effects of Control on Coyote Populations" (Connolly and Longhurst 1975). These authors created a coyote population simulation model, based on real-world coyote reproduction and mortality data available at the time, that showed coyotes to be remarkably resilient survivors, able to withstand an annual removal of 70% of the population and still persist. In fact, the authors stated that if all control efforts "collectively do not reduce numbers annually on a continuing basis by at least 75%, no sustained decline in the population can be achieved... in most situations, killing coyotes at rates below 75% may merely stimulate reproduction and aggravate the problem" (Connolly and Longhurst 1975:27). Sounds like a losing battle to me!

However, in considering this source, it is critical to understand that any model is "a simplification of real phenomena and requires certain assumptions" (Connolly and Longhurst 1975:5). In a subsequent critique of this and three other coyote population simulation models, Connolly (1978:340-341) pointed out "...these assumptions are particularly important because the models exceed the bounds of available data". He adds, "...the missing information has been fabricated through the use of simplified assumptions which may be only generally correct. Thus, the models express the general relationship in numbers, which cannot be taken literally. The resulting output will appear in specific terms, but can be interpreted only generally."

In the case of this early coyote population model, all the authors were doing was looking at how changes in one variable (e.g., control kill of coyotes) could theoretically affect certain other variables (e.g., reproductive rates) in an otherwise constant, closed system, all other things being equal. Among those real-world factors that were assumed to be constant or equal, that in reality are not, are carrying capacity (including attractive neighborhood foods and resources that attract coyotes), emigration and immigration (dispersal) rates, parasites and diseases, and so on (see Connolly 1995:26-27).

Let me be quick to add, however, that this argument in no way is meant to disparage or devalue the important role that computer simulation models can and do play in scientific research, including wildlife management. Also, simulation models for coyotes and other wildlife management topics continue to improve and become more sophisticated (see Conner et al. 2008).

The bottom-line conclusion of Connolly and Longhurst was simply that "Killing coyotes unselectively with the techniques presently available, is not a very feasible means of reducing populations over broad geographical areas", and that "...better understanding of coyote population dynamics is required" (Connolly and Longhurst 1975:33). The main reason behind this conclusion was their model's prediction that coyote populations can withstand high levels of control, and can recover quickly when control is terminated (Connolly and Longhurst 1975:19, 23), the proverbial "rebound effect." However, there is not a "catapult effect", as some want to believe. In fact, Connolly himself maintains that those who use the paper to oppose coyote management (i.e., control) use it inappropriately and out of context. He recently told me that the statement, "killing coyotes at rates below 75% may merely stimulate reproduction and aggravate the problem," has "little or no relevance to selective removal of a few problem coyotes, and people who claim otherwise are just damaging their own credibility" (G. E. Connolly, pers. commun., April 2009). Besides, the whole argument is really a moot point, since no one intends to try to eradicate all the coyotes in the Denver metro area. For excellent further analysis of the findings and limitations related to coyote simulation models, see Wade (1981) and Connolly (1995).

Co-existing with our "coyote neighbors"

This point of contention begins with the recognition that coyotes are living among us in close proximity; they aren't likely to go away; and we don't necessarily want them all to go away. I certainly accept those realities.

"Coexisting with coyotes" (or "living with coyotes") conveys several messages. A good message is that, "We are aware of coyotes among us and we are actively addressing the situation" (i.e., doing something to mitigate potential problems). The "bad message" in my opinion, is that we will do so without harming them; we want "peaceful coexistence." Loosely translated, coexisting with coyotes = we don't want to kill them. Most advocates of coexistence openly oppose lethal control, except possibly as a last resort.

Part of the coexistence message is that coyotes should "feel welcome" in our neighborhoods, at least as long as they aren't causing any serious problems. Let's "live and let live!" Seemingly, the expectation is that if people are being responsible with their pets and doing nothing to habituate coyotes (e.g., provide food, water, and harborage for them), we'll all "live happily ever after." It's "Mother Nature," "Animal Planet" and the "Discovery Channel" right in our own backyards. Unfortunately, few, if any, neighborhoods are like that. More often than not, some pets are poorly managed and food sources (both human and natural) are readily available. Coyotes can move in and begin to habituate

before they are even noticed. When they are noticed, many people pay them little mind, others think they're really interesting, and few do anything to frighten the coyotes or hurt them.

By then, the neighborhood is well on its way to a coyote problem. Geist (2007) notes, "An animal that has become accustomed to people can turn from indifferent to aggressive at the drop of a hat." Also, habituation "...begins when a creature tolerates humans at a distance." One well-known coexisting with coyotes program even warns, "an indifferent attitude towards a coyote in your yard has a similar effect as feeding" (SPES 2007). At that point a proactive, aggressive coyote management plan needs to be implemented, or coyote behavior can quickly escalate through the 7 stages outlined above (Timm et al. 2004). If public opinion still favors a "let's try to coexist" emphasis, fine. Pull out all the stops and go for it: warnings, education, pet ordinance enforcement, no-feeding wildlife regulations, hotlines, hazing, etc. But by all means, allow an option for lethal control. In all likelihood, sooner than later you will need it.

The problem I have with this whole idea relates to the fact that people can and do shape coyote behavior. To some degree, we can train or condition urban coyotes to behave acceptably or unacceptably. A problem with the coexistence model is that we train coyotes to be comfortable around us. We do this by teaching people to be too tolerant of coyotes – to make them feel too welcome in our midst. At that point, coyotes are habituated.

Biological carrying capacity is the maximum wildlife population that a given area (or neighborhood) can sustain annually, based on the habitat's resources. "Cultural carrying capacity" is the maximum wildlife population that a neighborhood will accept or tolerate, e.g., the number of coyotes that can compatibly coexist with the local human population (see Conover 2002:358). Another term for this is 'social carrying capacity' or 'wildlife acceptance capacity' (see Webster 2007:473). The problem with the coexistence model is that it raises the cultural carrying capacity to dangerous levels. If coyote control is analogous to mowing your lawn, promoting coexistence is like fertilizing your lawn. *Advocating coexisting with coyotes fosters tolerance, which fosters habituation, which fosters aggression toward pets and people!* At some point, that becomes irresponsible, and in that sense it really is a people problem.

One way we do this is by understating the potential danger that coyotes pose in an urban environment, i.e., we make them seem harmless. For example:

- We downplay the fact that coyotes are true predators and carnivores. Instead, we describe them as "smallish, opportunistic omnivores". One lady at the CDOW symposium called them the "ultimate flexitarian."
- We compare the number of coyote attacks (on people) to the number of dog bites annually. Of course, the number of coyote attacks (15-20?) is infinitesimal compared to the 800,000 dog bites (e.g., in 1994) that require medical attention (see

Schmidt and Timm 2007:291). We fail to mention that roughly 70 million dogs live in our homes and back yards.

- We portray coyotes as "naturally timid," "fearful of man," "more afraid of you than you are of them." When they do attack people, it's always because people are intentionally feeding them.
- The CDOW defines a "nuisance coyote" very broadly compared to a "dangerous coyote." A dangerous coyote is rightly defined as one that has attacked a person or exhibits aggressive behavior towards a human and/or poses a significant threat to human safety. However, a coyote that is habituated, preying on pets or livestock, or menacing does not qualify as dangerous. It is just a "nuisance coyote." I hope that one doesn't come back to bite them!
- Another common practice is to state that there have been only so many attacks *over the past 100 years* (i.e., few attacks over a long period of time). The CDOW has been doing this for years at their "Living in Lion Country" talks. We do the same thing with coyotes and wolves. We fail to mention that nearly half the lion fatalities have occurred in the last 15 years, or that 65% of the coyote attacks outside CA since the early 1970s have occurred in the last decade (Timm and Baker 2007).

Another way we teach people to be too tolerant of coyotes is by extolling coyote virtues, making them look good. For example:

- We build empathy for them. We speak of coyotes as victims, forced to live among us. Or, "they were here first."
- We value them as predators of "vermin" like rats, mice, or too many rabbits (i.e., coyotes are beneficial).
- We value them as competitors or predators of red foxes, raccoons, skunks and feral cats, which prey on our songbirds or waterfowl (i.e., an important part of the natural ecosystem) (see Webster 2007:443).
- We anthropomorphize or humanize them. This is part of what some call the "Bambi Syndrome." (I still haven't forgiven Walt Disney for what he did to wildlife management in this country.)
- We value them as "watchable wildlife," our "wildlife neighbors."
- We tend to romanticize or glamorize the bigger predators. Certainly the wolf has become the classic poster child of American wildlife enthusiasts. We often refer to the coyote as "clever trickster," "song dog," or even "God's dog."

Let me interject here that few people have more respect, appreciation and admiration for coyotes than I do. I find them fun to watch, fascinating to study, and challenging to catch or hunt. And they certainly are an integral part of natural ecosystems. I like coyotes too!

The third way we do this is by overprotecting coyotes. We teach that lethal control is somehow a bad thing – at best, the last resort to solving coyote problems. For example:

1. As we've seen, we teach that lethal control doesn't work, that it only leads to more coyotes, even though situation after situation has proven otherwise
2. We teach that lethal control is harder to do than coexistence measures, and it is more expensive and unsafe for pets and people. Arguably, the opposite is true.
3. We over-protect coyotes when we get the priority or order of lethal vs. non-lethal backwards. Often lethal control can have great preemptive or preventive value when done early in the sequence of aggression.
4. We over-protect coyotes when we postpone or start lethal control too late. The time to start is when attacks on pets have begun (Baker and Timm 1998:310).
5. We teach people that lethal control is "bad," yet we condition coyotes to attack when we don't do lethal control. Commenting on escalating wolf attacks, Geist (2007) said, "a necessary condition for attacks to occur is the *de facto* or *de jure* protection of wolves." The same is true for coyotes.

The reality is that coexistence is happening – coyotes are living among us, and we are living among them. And whether we like it or not, it will continue. Therefore, a coexisting with coyotes program is very valid as part of a broader coyote management plan that includes a lethal control option. As I have said elsewhere (see Oleyar 2007:378), we in wildlife damage management should support an integrated approach to reducing human-wildlife conflicts, one that is firmly rooted in public education, prevention, and non-lethal control measures. However, we must recognize and educate people to the fact that peaceful coexistence is not the norm in nature. To expect coyotes and wolves to peacefully coexist with people is both naïve and unrealistic. Coyotes and wolves play by their rules, not ours. The key to their survival is to exploit their environment. That is all they know to do, and sooner or later it comes at the expense of people. There will always be a need for lethal control.

Yell and throw stuff – that'll scare 'em!

This is the perception that hazing/harassment is the most appropriate way to re-instill fear of people in coyotes. Much like the other issues I've addressed, this one would be better described as a misperception than an accurate one. I'll try to explain why. Hazing is rather broadly defined and loosely used, but generally is some action meant to instill or re-instill fear of people in coyotes. It generally falls under headings like: fear-provoking stimuli; negative stimuli; negative conditioning; or aversive conditioning. In essence, it's action meant to frighten coyotes and make them want to stay away from people or pets. At the most basic level, it involves simple things like scolding, yelling, waving arms, and acting aggressive or threatening towards coyotes. Another level might employ some sort of loud noise: air horns, firecrackers, whistles, or banging pans. It could include inanimate devices like all-night yard lights, motion sensitive lights or sprinklers, or strobe lights. At the highest level, it could include projectiles or

shooting to scare but not injure or kill, e.g., slingshots, paintball guns, low velocity airguns, etc. Harassing goes a step further and includes actually chasing the coyotes until they're out of sight. Again, the objective is to scare coyotes but not hurt them. Hopefully they will become frightened enough to keep a safe distance.

The problem with these techniques is that they rarely work, except in the very early stages of coyote exploration of the urban fringes, when coyotes are still a bit wary of humans. Why? Because by the time these techniques are employed, the coyotes are already well-habituated. It's generally too late. That's certainly the case in the Denver metro area. Timm et al. (2004) stated, "Once coyotes have begun acting boldly or aggressively around humans, it is unlikely that any attempts at hazing can be applied with sufficient consistency or intensity to reverse coyote habituation." Schmidt and Timm (2007:17) add, "We believe that there are some problem coyotes whose habituated and/or aggressive behavior cannot be reversed with any feasible or practical methods..." Think about it: urban coyotes have already adapted to bumper-to-bumper traffic, honking horns, wailing sirens, flashing lights, people everywhere, yelling kids, barking dogs, etc. What's a little scolding and arm waving supposed to add to all that? I'm reminded of Fort Carson, a large army installation in Colorado Springs. I'm well aware when maneuvers are underway: the sky is lit up with exploding flares, howitzers are booming, the rat-tat-tat of machine guns is incessant, and the rumble of tanks is very discernable. Yet, the place abounds with coyotes – habituated coyotes.

Conover (2002:236-238) says, "The main problem with most fear-provoking stimuli is that animals soon learn that they pose no real threat and then ignore them. Habituation is the main factor that limits the effectiveness of fear-provoking stimuli as a method to resolve human-wildlife conflicts." He goes on to say, "The more animals are exposed to a fear-provoking stimuli, the faster they will habituate to it". Baker (2007:390) found that in Stage 3 and beyond of his scale of progressive aggressive coyote behaviors, "any changes in coyote behavior due to hazing was usually temporary..." The logical time to implement hazing is after lethal action has been taken, when coyotes have learned they have something to fear, or early in Stages 1 and 2.

But there are other problems as well. For instance, the amount of effort required for hazing to be effective is more than most communities are willing or able to provide. Schmidt and Timm (2007:297) state, "If the *majority* of residents would undertake hazing efforts . . . it is possible that some degree of wariness toward humans could be maintained" (emphasis mine). However, they preface that statement by saying it would take a *community-wide effort when these animals first become visible*. And they go on to add, "We recognize that coyotes will habituate to these non-injurious actions..." Getting that kind of effort is difficult to do, especially before coyotes have become a threat to pets or people.

The Vancouver B.C. "Co-existing with Coyotes" program (see Worcester and Boelens 2007:396) claims they have consistent success using non-lethal deterrents when their staff coyote response teams *aggressively and*

loudly physically chase observed coyotes out of a neighborhood. They note that, “The importance and level of the volume and hostility used cannot be overemphasized... *The coyote is pursued as long as its whereabouts are known*” (emphasis mine). Even then the staff tries to locate it and repeat the process. They will do this time and again if necessary. However, they still monitor for potential removal (i.e., lethal control) as the case requires. Addressing the role of harassment, Conover (2002:241) noted that “When an animal is consistently chased away from a site, it will stop returning to that site...” (emphasis mine). It takes intense, persistent effort from a lot of people to work. Part of the difficulty is that not everyone in a community supports even non-lethal coyote control. Some like or respect coyotes and will continue to provide sanctuary on their properties, treat coyotes kindly, and even feed them. At best, the coyotes get mixed signals and learn to adapt to hazing efforts.

I suggest that coyotes, like bears (see McCullough 1982), need to perceive humans as life-threatening or at least a source of pain before they will learn to respect (i.e., fear) humans. Until then, they will continue to explore and exploit their environment. A quote from a James Thurber by Conover (2002:229) says it well, “You can fool too many of the people too much of the time. But unfortunately, animals are a lot smarter.” The irony here is amusing: we try to deceive coyotes into believing we are dangerous by hazing them, but all we accomplish is deceiving people into believing that hazing works.

Hazing usually works only when accompanied by some level of lethal control. This should be evident from our review of successful coyote management programs in California and elsewhere. Again, Baker (2007:390) observed that, “in stages 3 and beyond, any changes... due to hazing was usually temporary... *unless one or more coyotes was trapped or shot.*” (emphasis mine). Conover (2002:226-232) punctuates the point by stating, “Unless the fear-provoking stimuli are actually capable of killing animals, habituation is inevitable...” Relying on hazing alone can even exacerbate the problem. Baker (2007) went so far as to say that removal of one or two coyotes may not be enough when communities wait until coyotes are too habituated. “When it comes to re-instilling fear of people in coyotes, perhaps the old physical fitness maxim says it best, “No pain, no gain.”

It’s not the coyote’s fault – it’s a “people problem!”

This is the claim that what we really have is a people problem, not a coyote problem. There is certainly a lot of truth to this claim, but not necessarily in the way implied. This one goes both ways. What is meant is that the problem is mostly the fault of people, not the coyotes. People are portrayed as the bad guys. Coyotes are portrayed mostly as innocent victims in all this (i.e., coyotes just being coyotes in a man-altered environment). Some of the arguments we hear the most are that coyotes were here first, people are irresponsible with their garbage and pets, and people are intentionally feeding coyotes. Of course, all these things are true to a degree, and they contribute to the problem. But the real problem is habituated, aggressive coyotes attacking pets and

people. Pets and people are the victims. The insinuation behind the claim that we have a people problem is that if people would simply be more responsible, we wouldn’t have a coyote problem. Some would go so far as to insist that we completely coyote-proof our yards/dog runs, cease to jog or walk the dog on public trails, and never let our children out of our sight. I don’t buy it. However, I do concur that we have a people problem in a different sense. I suggest that those who most exacerbate the problem are both the people who intentionally feed coyotes *and those who promote coexistence without lethal control.* Those who don’t want to hurt coyotes are the real people problem.

A contributing factor in all this is the great weight that agencies like the CDOW put on public opinion (i.e., human dimensions). Over-reliance on public opinion polls, which are largely driven by sentiment (i.e., emotion) and media bias (i.e., sensationalism), rather than reality (i.e., reason), skews wildlife policy decisions. In an effort to please the public, agencies often abdicate responsible actions in favor of passive platitudes. The whole idea of human dimensions, in turn, quickly transitions into politics. That’s a people problem. If it weren’t for sentiment toward coyotes and the influence of politics, we could solve the coyote problem.

Does the practical reality of human development (i.e., landscaped neighborhoods, playgrounds, parks and open space, golf courses, etc.) cause a coyote problem? Or, do coyotes moving into such areas cause the problem? Interestingly, the Federal requirement that Colorado Front Range developers set aside critical habitat (i.e., riparian corridors) for the “endangered” Preble’s meadow jumping mouse (*Zapus hudsonius preblei*) adds an ironic twist to this question. Habitat that favors the mouse greatly favors coyotes, too! What about the fact that some of the highest densities and smallest home ranges of coyotes ever reported are found in suburban areas (Shargo 1988, Gehrt 2007). Is that a people problem or a coyote problem?

It’s generally agreed among coyote experts that prior to European colonization of North America, coyotes were native primarily west of the Mississippi. Now that coyotes have greatly expanded their range to include all 48 contiguous states, does that not make them an “invasive species” east of the Mississippi? Stan Gehrt (pers. comm., 2009) says that coyotes first started showing up in remote, wooded areas in the Chicago area in the 1970s. Now, there are more than 2,000 throughout that metro area. Is that a people problem or a coyote problem? The coyotes were not there first. I’d argue that what we have is really a coyote problem compounded by people. But to whatever extent it’s a people problem, it’s due largely to people opposing or not utilizing lethal control.

CONCLUDING THOUGHTS

It should be apparent from this discussion that a lot of misconceptions and misinformation surround the debate over how to best manage urban coyotes. I’ve demonstrated how this misinformation actually fosters human-coyote conflict rather than mitigating it. My comments are meant to challenge some of the prevalent

thinking and expose a few flaws in what some people believe or perceive. Hopefully, I've created a more balanced and accurate understanding of what is involved, and perhaps placed a little more responsibility where it rightfully belongs. It should also be very clear that I believe strongly in the role of lethal control. I've made the case for it. I don't believe we can effectively manage wildlife without it.

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